

The Potato News Bulletin

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A Forward Look

While it is always more or less presumptuous on the part of anyone to venture suggestions in regard to crop acreage or crop prices, it may be permissible at this time to take account of the present outlook of the potato industry. All information at hand at the present time indicate an increase in the early crop potato acreage in the South. It is apparent that the southern grower is figuring on a good market for early potatoes. Let us see what basis he has for such a conclusion. On February 12, 1924, the Bureau of Agricultural Economics of the United States Department of Agriculture published the following data: "The marketable stocks of white potatoes remaining on hand on January 1, 1924, in the 35 late potato states are estimated by the Department of Agriculture to aggregate 28 per cent or 107,977,000 bushels of the total of 385,830,000 bushels produced in those states in 1923 compared with 30.5 per cent or 129,463,000 bushels remaining on January 1, 1923, out of the 1922 crop of 423,885,000 bushels and 26.6 per cent or 90,023,000 bushels on January 1, 1922, out of the crop of 337,980,000 bushels produced in 1921 in these 35 states."

On the basis of these estimates it would seem that the prospect of a fair price, in northern markets, is brighter this year than that of last year, but not so good as that of 1922. There is, however, a goodly supply of late potatoes on hand, and with the better prices prevailing at the present time than were being obtained last season, coupled with better condition of the stock generally, it may be confidently expected that a larger per cent of the present holdings will be marketed than was the case last year. One might assume, therefore, that the early crop will have to be sold in northern markets that are fully supplied with old potatoes. The prospects, therefore, for fancy prices for new potatoes, except for those marketed in March and April, may not be so promising as the actual holdings of late stock would indicate.

The grower of late or main crop potatoes should at this time be deciding his 1924 acreage. Serious consideration should be

given to the advisability of reducing the acreage. This should be especially considered by those who are remote from market or whose crop must be marketed in direct competition with stock from growers who are more favorably located. The writer believes that a 10 per cent reduction in the potato acreage of the United States in 1924 would result in the grower realizing a larger return in actual dollars and cents than if the larger acreage were planted. The suggestion that I would leave with you is this,—reduce your acreage, use nothing but high-class seed and give the crop the best cultural attention possible.—**W. Stuart.**

POTATO NOTES

Colorado.—"There is very little change in the potato market. The movement seems to be very moderate at this time with very little demand. The buyers are doing some storing in their warehouses which might indicate that they expect to see some increase in price in the near future. There will probably be a decided cut in the acreage in the Greeley district this year. Just how extensive the cut will be, I am unable to say at the present time, but we do know that there will be a much larger acreage of sugar beets that is usually grown."—**W. C. Edmundson.**

Illinois.—The firm of Albert Miller Company, Chicago, Ill., has recently secured the services of Charles R. Stevenson to take charge of the pathological work connected with their rapidly developing seed potato industry. Since the spring of 1921, Mr. Stevenson has been with the Wilson Farms in New York State, where he inspected the output of their Irish Cobbler, American Giant and Green Mountain seed potatoes.—**W. Stuart.**

New Jersey.—"The supply of second crop seed potatoes in Salem County is pretty well cleaned up at the present time. There are some lots of seed of undesirable quality that have not been moved and will probably not be moved as seed potatoes.

In view of the fact that Eastern Shore, Virginia, expects an increase in acreage this year, it is very likely that fact will discourage our growers to a large extent. A rough estimate at the present time is that our acreage in southern New Jersey will be decreased by at least 15 per cent and perhaps more. This is due to the increased acreage from the South, and also the lack of ready money among our potato growers. A few Maine seed will be planted this year, but fully 95 to 97 per cent of our crop will be grown from South Jersey second crop seed."—**J. C. Crissey.**

New York.—Each Farmers' Week in February at Cornell University, the Department of Vegetable Gardening stages an educational Potato Show, open to all people and all varieties. No organization exhibits are shown, but individual growers are given

opportunity to exhibit the variety they are growing, either named or unnamed. It is estimated that 1,000 people inspected the exhibit this year. In many instances growers send in material in order to have its identity and its classification established, and to be instructed as to tuber diseases and exhibition qualities evident in the samples. This year about 100 entries were made by 46 growers, 49 varieties being represented. These samples were furnished from 20 different counties of the state. Of the 103 exhibits, 34 were Rural, 14 Green Mountain, 11 Rose, and 6 Cobbler type. Several samples of the Up-to-date group were in evidence as demonstrating the increase of this type of potato in New York. The Gardner Farms at Tully, New York, for the second consecutive year, was awarded the Sweepstakes premium, on a sample of Russet Rurals. Eleven tuber samples were exhibited, and it was found that this number of tubers stacks handily without the necessity of any container. At the same time it is easy for the observer to see all tubers in the sample. Although the College of Agriculture does not recommend this plan for general use in staging commercial exhibits, it is desirable from the standpoint of the educational work of the College in assisting growers to a better knowledge of varieties, tuber diseases, and what constitutes market quality.—**E. V. Hardenburg.**

New York.—The General Organization Committee of the New York State Cabbage and Potato Growers have recently released to the press, under the caption of "Upstate Potato Growers Losing Millions Annually," some very interesting observations on New York City price differentials. According to W. B. Farrar, the campaign manager, car lot Long Island potatoes were selling in New York City, on February 16, at \$3.40 per bag, while "upstate" potatoes were only bringing \$2.75, or a difference of 65 cents per bag. The only justification for this differential, in Mr. Farrar's opinion, is that of lack of standardization and grading of the "upstate" stock.

The statement is also made in this article that a similar differential has existed for several years between Maine and Long Island potatoes. Ordinarily this differential has varied from 65 cents to \$1.00 per bag. On February 16, Maine's "Pine Tree State" Brand potatoes were selling in New York City at \$3.20 per bag as against \$3.40 per bag for Long Island stock, or a differential of only 20 cents per sack. A large New York City dealer says this condition has not been duplicated within the memory of the present generation. Credit is given for the smaller marginal difference in the selling price of Maine and Long Island potatoes to the efforts of the Maine Potato Growers Exchange to grade, standardize and sell its best grade of stock in a labeled bag bearing the "Pine Tree State" Brand.—**W. Stuart.**

CERTIFIED SEED POTATO NOTES

New Brunswick.—There was a marked increase in the acreage of fields which passed inspections this year. Green Mountains head the list with an acreage of 1,380, averaging 278 bushels per acre, field run. Irish Cobblers to the extent of 750 acres passed inspection, and yielded on the average 222 bushels field run. With small acreages of a few other varieties included, the total passing the 1923 field inspection was 2,186 acres, and the average yield for all varieties amounted to 258 bushels to the acre.

In grading the seed for certification, Cobblers have averaged about 60 per cent, with occasional lots running up to 85 per cent. Mountains have been grading around 70 per cent certified seed. As our certified regulations call for the elimination of all tubers below 3 ounces and above 12 ounces, it will be seen that there must be a greater waste than in a No. 1 table stock grade.

New Brunswick seed Cobblers are practically all sold. A few remaining lots will be picked up as soon as spring shipments commence. Green Mountains are moving slowly. There is more of this variety going for table stock than for seed purposes, as table stock prices have been rising lately and growers are getting anxious to clear their cellars before spring.

Indications for 1925 point to an increased acreage in seed Cobblers. The largest growers of this variety are grading their seed carefully before planting, and are intent on using every method possible to have some high-class seed Cobblers for the next season's trade.—**J. F. Hockey, Fredericton, N. B.**

New York.—The New York Seed Improvement Co-operative Association, Inc., completed its first fiscal year this month. Being organized in February, 1923, for the primary purpose of fostering the production and use of improved farm seeds of all kinds, its volume of business for the first year shows an inspection and certification service performed on a total of 1,063 acres of potatoes and 790 acres of grain.

The first annual meeting held in February was not only a business meeting for the transaction of annual business, but was also in the nature of a conference looking toward some reorganization. There were in attendance individual seed growers, members of the co-operative, contract growers, dealers growing their own seed, and dealers having seed grown under contract. The plans for 1924 are essentially the same in principle as those which worked out so successfully the past year. Such details of organization as would tend to reduce overhead expenses of the organization occupied a considerable part of the discussion at the annual meeting. Instead of hiring a salaried manager and maintaining an office at Syracuse, as has been done in the past, the association will this year employ an office secretary who will have an office at

Ithaca, in order to be accessible to those departments at the State College of Agriculture from whom the inspection service is annually obtained at cost.

The directors chosen for 1924 are: Bruce P. Jones, President, Hall; E. E. Hults, Vice-President, Marathon; F. C. Gibbs, Fillmore; D. A. Toan, Perry, and L. L. Foote, Malone. President Jones will have charge of the immediate direction of the association services. It is expected that approximately 1,500 acres of potatoes and 1,500 acres of grain will be offered for inspection and certification this year. A single charge of \$3.00 or \$4.00 per acre, varying with the acreage per farm, will be made for potato inspection service, while about \$1.00 per acre for grain inspection will be levied. As a co-operative organization whatever balance from these fees remains after paying service costs, will be returned to the grower pro rata.

The encouraging feature of the reorganization plans are that the attempt to reduce overhead expenses will result in bringing all seed-producing agencies in the state into one association for mutual benefit under a unified standard. This should react to the benefit not only of the seed grower, but also to the buyer.— E. V. Hardenburg, Ithaca, N. Y.

Vermont.—The present status of the Vermont growers, so far as marketing is concerned, is that 75-80 per cent of the certified stock was sold in the fall, with the balance, about 20,000 bushels, still on hand for spring sale. This is a considerable improvement over the situation in the spring of 1923. The prices have ranged from \$2.00 for the first sales in the autumn, to \$1.50 per bushel for the latest, these prices being f. o. b. our local stations.

The demand for Vermont grown Irish Cobblers has considerably exceeded the supply, and the indications are that the acreage of this variety will be materially increased in 1924. The establishment by the state association of a marketing committee to keep the growers informed as to market prices, and to suggest a uniform selling price, has proved beneficial, and has resulted in less competitive bidding among local growers and associations for business. By this means growers have been advised, in weekly bulletins, of what seemed to the committee to be the most desirable prices at which to offer Vermont stock, and at the same time the growers had entire freedom in the matter of following the recommendations. The indications are, that without any binding contracts a similar program next fall will secure a large measure of co-operation, the selling price will be stabilized, being modified as the situation demands, and the interests both of the growers and the purchasers of Vermont seed served to advantage.

The quality of certified stock throughout the state is undoubtedly improving from year to year through the discarding of undesirable strains, and the distribution of seed especially recommended for local use. To this end the Commissioner of Agricul-

ture compiles a list of the fields recommended for local use, these being the ones reported by the inspectors to be most free from disease, and producing tubers of good type and yield. The growers whose names are included in this list are invited to furnish samples for the state-wide seed-source test, which is conducted in connection with the annual field meeting of the state association. For this test the samples are assembled in the fall and stored under uniform conditions.

Vermont seed was given a very high rating in several seed-source tests in 1923, i. e., at Presque Isle, Maine; at Storrs, Conn.; and at Suffolk County, N. Y. Samples have been requested for 1924 tests in Suffolk County, N. Y., and in New Jersey.

Vermont as a source of high-grade foundation stock has certain undisputed advantages, such as, the elevation and isolation of its fields. The factor of elevation insures good air and water drainage, minimizing the danger from late blight and certain soil-borne diseases more prevalent in lower fields. The relatively small size of Vermont fields and their separation from each other, often by considerable distances, as well as by wooded areas, furnishes a measure of isolation which is decidedly advantageous with reference to the control of such diseases as mosaic, leafroll, and spindle-tuber, which are spread by aphids. The characteristic topography of Vermont enhances these factors to a degree beyond that of most other seed potato sections.—A. H. Gilbert, Burlington, Vt.

YOUNG WOMEN AS ROGUERS

Julian A. Dimock and Elizabeth L. Clarke, East Corinth, Vt.

Several years ago Julian A. Dimock of East Corinth, Vt., advertised "disease-free" seed potatoes. He found no diseased plants in his fields, and at the time of the state inspection the officials found none, so he got a clean score. In the existing state of his knowledge this seemed ample proof of a prize package. He sold to other seed growers, and he himself planted a large acreage of this stock. The next year he knew more about the ways of mosaic and leafroll! But he thought the fault was with his stock, so he began to try out seed from other sources. It was soon borne in upon him that the trouble lay, not in the stock, but in the fact that two inspections a season could not give as complete a record as he wanted. So then he organized an inspecting and roguing force of young women to tell him what his fields really did contain, and he still employs them because he believes that only women could be capable of the persistent, painstaking work on which he insists. The girls are on the job from the time the plants are six inches high until they are killed by frost. What if symptoms do appear and disappear? The girls are constantly on the watch for them, and offending plants are pulled up at once; though, of course, the whole acreage cannot be covered in a few hours, and

some slips are made. A little figuring will tell what kind of a job it is to rogue a hundred acres,— with about 15,000 plants to the acre,— not only once, but four times during the season.

At the Dimock orchard this work is in charge of Miss Elizabeth Lawrence Clarke, daughter of the professor-emeritus of botany at Williams College. Coincident with the field work, percentage records are kept of all roguings, and in special cases actual counts are made. For example: The whole history of Dimock Orchard Strain 16, from its origin four years ago as a single promising hill, to the present time with a harvest of 4,000 bushels, has been accurately recorded and exact count kept of every diseased plant found.

Mr. Dimock no longer advertises his certified seed as "disease free," instead his purchasers can now get for the asking pedigrees giving disease counts and acreage yields for just as many years as Mr. Dimock has raised the stock in question.

NOTES ON RECENT LITERATURE

ANONYMOUS. — Scottish Society for Research in Plant Breeding. — *Report by the directors to the annual general meeting, July 19, 1922.* — This report gives an account of the organization of the Scottish Society for Research in Plant Breeding and the work of the station which the society has established at East Craigs, Corstorphine, $4\frac{1}{2}$ miles from Edinburgh. The major part of the investigations which are being conducted at this station deal with the breeding of cereals, potatoes, root crops, grasses and clovers.

The work with potatoes consists of tests of about 200 varieties, chiefly unnamed seedlings which had been raised at St. Andrews by the late Dr. J. H. Wilson, and new seedlings developed at the station of which several thousand were grown in 1922. The points which are given special consideration in the development of new varieties are immunity from wart disease, high yielding capacity, early maturity and good table quality. As soon as promising seedlings are secured they are sent to the Wart Immunity Trials at Philpstoun for an official test of their behavior with respect to wart disease. In some cases entire progenies of certain crosses are tested to determine the inheritance of resistance to this disease. Plans for future work include the selling of certain varieties and their progenies in the hope of developing varieties which will breed true for immunity from wart disease. — C. F. Clark.

ANONYMOUS. — Financial Aid for Potato Growers in Hastings, Florida Section. — *The Packer (N. Y.)* p. 7, Jan. 19, 1924. According to the Packer's correspondent it requires about \$75,000.00 per month during the potato growing season to properly finance the growers in this section. This sum does not include the cost of seed and fertilizer, which require additional financing. For several years it has been the custom to pay farmers the sum of \$25.00 per acre

on the crop in five monthly payments during the preparation of the land and its subsequent cultural care. Of the 18,000 acres planted in the Hastings district financial aid is being extended to approximately 15,000 acres. The correspondent furthermore makes the assertion that including the advances paid to farmers on seed and fertilizer it is believed that upwards of \$2,000,000.00 is expended upon the crop almost before it is planted. — **W. Stuart.**

ANONYMOUS. — South Carolina Potato Growers to Buy Their Supplies Cooperatively — *The Packer* (N. Y.) p. 7, Jan. 19, 1924. — At a meeting of the Florence, S. C., potato growers on January 8 arrangements were made for the co-operative purchase of seed and barrels. An order was placed for 5,000 barrels and a committee named to purchase the seed. One of the encouraging decisions reached by the growers at this meeting was that of the treatment of all seed planted in order, as stated, "to get the greatest possible yield." A question receiving considerable attention at the meeting was that of a uniform grade and giving it a Pee Dee brand. The indications are for an increased acreage over that of last year. — **W. Stuart.**

ANONYMOUS. — Potato Crop Doing Well. *Fr't. Trade Jour. and Prod. Rec.* 70: 4, Feb. 16, 1924. — This communication to the above Journal which was written at Hastings, Fla., February 13, reports the potato crop of that section to be doing well. Many acres are coming up well and the plants are strong and healthy. A number of acres in the Federal Point section will be ready to dig within six to eight weeks. In a few sections the growth of the plants have been retarded by too much rain. — **W. Stuart.**

ANONYMOUS. — Florida Potatoes Moving. — *Fr't. Trade Jour. and Prod. Rec.* 70: 5, Feb. 23, 1924. — Under date of February 20 the author of the above note writes from Ft. Meyers, Fla., that while in previous years potato planting in that section was more or less of an innovation, the growers this season have gone into it commercially. It is estimated that of the 450 acres planted about 350 are controlled by one firm. Rains in January are reported to have curtailed the crop materially. Approximately 75 acres are now ready to dig. The bulk of the crop will not be ready to dig for a month or six weeks. The expectation is for a 50,000 bushel crop. The tubers will be packed in crates or hampers. — **W. Stuart.**

ANONYMOUS. — Potato Shortage. — *The Fruit-Grower*, 57: 170, Jan. 1924. — The pendulum movement of potato prices in England is commented on by the writer as follows: "A year ago we were getting potatoes in our local markets from the eastern side of England to be sold on commission for what they would fetch, which was not much, and vendors of seed potatoes in soliciting custom offered the most attractive terms. Now it is all very different. The price of ware (table) potatoes keeps going up and up, and

people who were unperturbed by the slump a year ago, but planted their usual acreage, have the laugh over their neighbors who thought potato growing was played out." Seed potatoes are reported to be steadily advancing in price with an apparent shortage of stock.—**W. Stuart.**

ANONYMOUS. — Great Britain Potato Crop. — *Frt. Grower*, 57: 95, Jan. 17, 1924. — According to estimates of the Board of Agriculture for Scotland, the total production of potatoes in Scotland in 1923 was only 832,000 tons (31,161,333 bushels) or 371,000 tons less than in 1922. The total production of potatoes in Great Britain is estimated at 3,576,000 tons (133,504,000 bushels) or 1,627,000 tons less than in 1922 and 422,000 less than in 1921.—**W. Stuart.**

ANONYMOUS. — Potatoes for Uruguay. — *Agr. Gaz. and Modern Farming*, 98: 655, Nov. 23, 1923. — Potato production in Uruguay in 1923 was below normal. In 1922 imports of potatoes in Uruguay were approximately 35,500 tons (1,325,333 bushels) the greater part of which came from Argentina. The writer is of the opinion that British exporters have a chance to capture some of this trade provided they maintain a high standard of quality of stock shipped.—**W. Stuart.**

ANONYMOUS. — Nitrate of Soda for Potatoes. — *The Canadian Horticulturist*, 48: 31, Feb. 1924. — The writer claims that Canadian potato growers are coming more and more to appreciate the value of nitrate of soda in potato production. Good results have been obtained when used alone or in combination with phosphoric acid or potash, or other commercial fertilizers. Typical experiences of growers in Ontario are cited and summarized. In all the experiments cited the fertilizer was applied broadcast and harrowed in on or just prior to the day the potatoes were planted. An application of from 200 to 300 pounds of nitrate of soda per acre usually gives the best results.—**W. Stuart.**

ANONYMOUS. — Sale of Seed Potatoes. — *The Fruit-Grower*, 57: 167, 1924. — Convictions have recently been obtained by the Board of Agriculture for Scotland against certain Scottish seed potato merchants for the sale to English customers of quantities of seed potatoes with an incorrect description of the variety. According to the Seeds Act of 1920 and the Seeds Regulation of 1922 the seller of seed potatoes is required to make a statement in writing to the purchaser at, or before, the time of sale or delivery, containing particulars as to the class, variety, size and dressing of the potatoes. The name of the variety in this connection is not taken to be incorrectly stated if it is true in respect to 99 per cent of the total quantity sold.—**W. Stuart.**

ANONYMOUS. — Hastings Potatoes Set. — *Frt. Trade Jour. & Prod. Rec.* 70: No. 18, p. 8, Feb. 2, 1924. — The entire potato crop of this section has been planted. Unfavorable weather delayed planting to some extent. Basing the extent of the crop planted on the fertilizer and seed used it is estimated that the three counties, St. Johns, Putman and Flagler will have about 18,000 acres of potatoes this season. It is claimed that this represents a 20-per-cent increase over last season's acreage. One of the significant statements by the writer of the article is that 95 per cent of the seed planted this year was certified. It is further stated that past tests conclusively show that it pays to plant certified seed as they produce a much finer grade of potatoes than ordinary seed. An ideal potato season is anticipated.—W. Stuart.

ANONYMOUS. — Storing Seed Potatoes for Second Crop Planting. — *Mkt. Growers Jour.* 34: 84, Feb. 1, 1924. — This article states that Frank Fehr, of Louisville, Ky., has the largest vegetable storage house in America. Its capacity is approximately 1,300,000 square feet. This firm has recently published a pamphlet prepared by W. D. Valleau, plant pathologist of the Kentucky Experiment Station, on "How to cut and store seed potatoes for second crop planting." The pamphlet is sent free to all growers who apply for it. Experience has shown that seed cut in February or March, and put into barrels and placed in cold storage though generally keeping well, would sometimes rot badly. Seven recommendations are made for the prevention of storage rots:—

1. Keep storage cellar as close to 45° F. as possible.
2. Dry surface of potatoes before storing. Do not pour down chutes but place in baskets or sacks and handle carefully.
3. At cutting time keep temperature low and avoid heat.
4. Freshly cut potatoes may be put into barrels and covered with burlap where healing will take place in temperature of 45° F. Sprinkle sulfur over cut pieces as they are put in barrel. Let them heal for three days before taking out.
5. Before barreling bore six one-inch holes or 1½ inch holes just above lower hoops for ventilation. It is best to use only one layer of onion sacking over top of barrel. Use strong barrels.
6. Haul to cold storage on a cool rather than on a warm day.
7. Storage houses should be kept between 35° and 37° F. An electric fan for chilling is desirable. — W. Stuart.

ANONYMOUS. — Good Potato Acreage in Rio Grande Valley. — *The Packer*, Feb. 2, — 1924. Planting for the early spring harvest is about over. The present outlook is for about 3,500 acres. About 125 carloads of seed, practically all of the Triumph variety were used. One carload is estimated to plant 30 acres.—W. Stuart.

ANONYMOUS. — Hissing Peanut Now Driven Out by Potato Chip. — London Custom is Held Responsible for Change in New York. — *Detroit (Mich.) Free Press*, Jan. 9, 1924. — New York, January 8. — The hissing peanut is fast being driven from the lower East Side

by the sizzling potato chip it was apparent today, and London is responsible. Two months ago Philip Weinstein, a pickle vendor, had an idea. It was to sell fried fish and potato chips on street stands after the manner of the London vendors. Being a business man, he started in only with potato chips. Such was his success that scores are now doing likewise, and today there was scarcely a street corner in the district not having a stand vending the chips at five and ten cents a bag. The fish end of the combination is to be introduced next week, it was said.—**W. P. Hartman.**

ANONYMOUS. — Ten Years of Potato Spraying. — *Hints to Potato Growers*, (N. J. State Potato Assn.) 4, No. 9, Jan. 1924. — A ten-year potato experiment by the New Jersey Experiment Station was concluded with the close of the 1922 season. During this period twenty-three spraying experiments were conducted on the early Irish Cobbler crop with home-made Bordeaux mixture. Nineteen of these experiments showed increased yields, and the remaining four decreased yields. Since 1918 consistent increases have been uniformly obtained. The author attributes these more favorable results to the employment of a high-pressure sprayer. The average increase from spraying during the years 1913 to 1918 inclusive was 10.1 bushels per acre as compared with 42.6 bushels for the years 1919 to 1922 inclusive. The average increase for all tests was 28.2 bushels per acre. These increases were obtained from the control of early blight, tipburn, and in one test from the control of hopperburn.

Sixteen spraying tests conducted upon the late crop Irish Cobblers during the eight years ending with 1922 gave positive results in all but one instance. The average increase from spraying with Bordeaux mixture was 33.2 bushels per acre. It is claimed that seed potatoes from sprayed plants have greater vigor than those from unsprayed plants. Proof of this statement is furnished by data obtained from planting seed in 1921 from sprayed and unsprayed 1920 plants. The average height of plants from unsprayed lot of seed on June 25 was 11.5 inches with 45 per cent of yellow leaves, whereas those from sprayed plants averaged 13.2 inches in height with only 22 per cent of yellow leaves. Seed from sprayed plants yielded 13.4 bushels per acre more than the unsprayed.—**W. Stuart.**

ANONYMOUS. — New Kinds of Potatoes. — *The Fruit Grower*, 57: 167, Jan. 1924. — Announcement is made by the National Institute of Botany that it is now prepared to accept entries for its third series of yield and quality trials of new varieties of potatoes from breeders who are willing to entrust the Institute with the marketing of their productions on a profit-sharing basis. The trials are planned to last five years, at first in Scotland only, but in the later years in English potato districts also. Only such varieties as do well in the trials will be placed on the market.—**W. Stuart.**

ANONYMOUS. — Profitable Potato Production. — This is the title of a booklet recently published by The Soil Improvement Committee of the National Fertilizer Association. The author of the booklet emphasizes the following factors: (1) Proper soil conditions; (2) Good seed — preferably certified; (3) Close planting; (4) Feeding the potato crop; (5) Protecting the potato crop; (6) Proper equipment. The necessity of a deeply prepared seed bed in which the potato plant can produce a good root system is stressed, as well as the quality of the soil and the incorporation of plenty of organic matter. Good qualities of parents are transmitted to the progeny quite as certainly as are poor qualities, hence the importance of using good seed. Plant potatoes in rows 30 to 36 inches apart, with hills 12 to 18 inches apart. Planting in check rows 3 x 3 feet or $3\frac{1}{2} \times 3\frac{1}{2}$ feet apart is not an economical use of land.

The potato is a highly developed plant requiring an abundant supply of available plant food throughout its growing season. The function of ammonia, phosphoric acid and potash in the development of the potato plant and tubers is stated, as well as the effect upon the plant when any of these elements are lacking. Spraying for the protection of the crop from insect and fungus injury is advocated as a necessity.

Proper equipment is considered essential to the economical production of a profitable crop.—W. D. Hurd, Washington, D. C.

HADLEY, C. H. AND McCUBBIN, W. A. — Changes in certification standards. — *Pa. Dep't Agr. Seed Potato Circ. No. 19, Feb. 15, 1924.* E. L. Nixon and H. C. McWilliams met with the State Department of Agriculture Seed Certification staff on February 6 and the following standards were adopted as regards inspection requirements:

1. First inspection.—Fields will be disqualified which contain more than 5 per cent of leaf roll, 2 per cent mosaic, 1 per cent curly dwarf, 2 per cent fusarium wilt, 2 per cent blackleg or 10 per cent rhizoctonia.

2. Second inspection.—Percentages in excess of any of the following will disqualify:—One per cent of either leaf roll, mosaic, and curly dwarf; 2 per cent fusarium wilt, and 5 per cent giant hill.

3. Third inspection.—More than one per cent combined of the diseases listed under second inspection will disqualify. If at this inspection any diseases are found but not in excess of the 1 per cent permitted, the diseased plants and tubers must be removed from the field in the presence of the inspector. Late blight, if present, should be recorded and if serious enough to obscure other troubles the field will be disqualified.

4. Fourth (tuber) inspection.—All common scab shall be removed to within ten per cent, which shall consist of moderate infection. All bin rots must be removed. If late blight was present in the field at the final inspection, such seed will not be eligible for certification if shipped in the spring. Potatoes will be disqualified for certification if improperly stored, as evidenced by "black heart", shrivelling, or excessive sprouting. Seed must be graded in accordance with best standards. W. Stuart.

HADLEY, C. H. AND McCUBBIN, W. A. — The Noble 400. *Pa. Dep't Agr. Seed Potato Circ. No. 19, Feb. 1924.* — The 400 bushel

potato club was started by E. L. Nixon of the Pennsylvania State College in 1923. The members of this club were recently presented with medals to mark their proud distinction. In the author's opinion the outstanding feature of this accomplishment is that of demonstrating that differences in soil and climate are not as serious limiting factors as has been commonly believed. If 54 farmers in 24 counties scattered all over the state, in a year not particularly favorable to the crop, and under varying cultural practices can grow 400 bushels of potatoes on an acre of land, who is there that cannot produce half that amount? The success of these club members has led to many inquiries as to how they did it. The authors believe the chief factors involved in their success were the use of good seed, proper fertilization, thorough tillage, spraying, etc. Good seed is considered the most important factor.—**W. Stuart.**

LIPMAN, J. G. — Sources of Ammonia in Potato Fertilizer. — *Hints to Potato Growers.* (N. J. State Potato Ass'n) 4: No. 9, January, 1924. — The purchaser of commercial fertilizer is concerned about the source of ammonia because they vary in cost, efficiency, safety in use, influence upon mechanical condition of the mixture and the effect upon the acidity of the soil. Sources of ammonia are generally classed as nitrates, ammonium salts and organic matter. The chief sources of ammonia are: nitrate of soda from Chile and Bolivia, sulfate of ammonia, a by-product in the manufacture of coke and illuminating gas, and products of animal and vegetable origin, such as tankage, fish, dried blood, cottonseed meal, etc. The New Jersey potato growers in pre-war days used a 4:8:10 mixture with one third of the ammonia derived from nitrate of soda, one third from sulfate of ammonia and the balance from organic sources. The popular mixtures now are 4:8:5 and 5 8:5. Recently more attention is being given to the sources of ammonia. In reference to cost at prevailing prices, ammonia in sulfate of ammonia costs less per unit than that in nitrates or organic materials. The organic ammoniums often cost twice as much per unit as that derived from sulfate of ammonia. The nitrates are most efficient, ammonium salts next, animal and vegetable materials considerably less efficient than nitrates. Organic sources of ammonia should be reduced to a minimum consistent with satisfactory mechanical condition. In applying large quantities of fertilizer in the row, organic sources of ammonia are safer to use than the more concentrated and more soluble chemicals, like nitrate of soda or sulfate of ammonia. The use of sodium nitrate will tend to make the soil favorable for the growth of scab organism, while the use of sulfate of ammonia tends to check it by increasing the acidity of the soil. Constant use of sulfate of ammonia or sulfur may ultimately injure the crop. It is preferable to derive about one unit from sodium nitrate, one or two from sulfate of ammonia and the balance from organic sources. The

fertilizer practice should be such that it will make the soil unfavorable for scab growth and not injure the crop.—W. M. Peacock.

55.4 / **PRIESTLEY, J. H. AND WOFFENDEN, LETTICE M.** — The Healing of Wounds in Potato Tubers and their Propagation by Cut Sets. — *Ann. Appl. Biol.* 10: 96 - 115. Feb., 1923. — Studies by the authors show that in the healing of cut surfaces of potato tubers certain processes follow in regular order. Upon being exposed to the air the freshly-cut surfaces of the tuber quickly darken as the result of oxidation due to the action of oxidising enzymes. Soon, however, this dark colored surface is covered with a white, partly crystalline deposit which is the residue of inorganic salts, starch, etc., left after the evaporation of the sap from the cut surface. After a period of 12 to 36 hours a brown deposit of suberin, formed from the oxidation and condensation of fatty substances in the sap as it dries up, appears on the walls of the cells in close proximity to the cut surface, comprising a layer sometimes one or two cells deep and in other cases seven or eight cells deep. This was found to form only in the presence of air and the rate of formation to vary with the variety, temperature and possibly other conditions. This layer, or "blocked" surface is considered important as a barrier to the penetration of fungi and to loss of water by evaporation. Directly below this an additional barrier is developed within a few days by a layer of rapidly dividing cells which forms a continuous sheet of cork tissue. When freshly cut tubers were exposed to strong sunlight for some time or left in a very dry atmosphere the development of these protective corky layers was greatly reduced and irregular, furthermore, the dried deposit on the surface became hard and later cracked, thus opening up avenues into the uninjured tissue.

In the preparation of tubers for planting it is suggested that the cut sets be spread out for a day or two in a moist, warm place, protected from direct sunlight. Dusting the cut surfaces with lime did not aid in the formation of the corky layers.—C. F. Clark.

65.8 / **SALAMAN, R. N.** — A Leaf Index as a Help to the Identification of Potato Varieties. *Nature [London]*, 112 (1923), p. 922. — The first lateral leaflet on the left of the midrib of each leaf is measured and its index, $\text{breadth} \div \text{length} \times 100$, calculated. The leaf index of a variety must be ascertained from adult leaves on a healthy plant. The variation of the index within any given variety is a normal one and represented by a normal frequency curve. The probable error of the difference of two means of 20 each is 0.7. A difference of two units in the index may be considered as of significance. Of 65 varieties of which the index was determined, the value of the index ranges between 50 and 72. Neither the place of origin of seed tubers nor the locality where the plants are raised has any effect on the leaf index, provided that the plants are healthy. The leaf index is a constant for each variety.—H. M. Steece.

MISCELLANEOUS PAPERS

HASTENING THE SPROUTING OF POTATOES

J. T. Rosa, University of California, Davis, Calif.

As is well known, the potato has a more or less definite period of dormancy, from which it gradually emerges three to four months after maturity. Planting potatoes while they are in this dormant period results in slow irregular sprouting or perhaps no sprouting at all. This becomes an acute problem in sections having a long growing season, where it is desired to grow two crops of potatoes a year. In such sections, growers now depend mostly on old seed held over in cold storage, to plant the second or fall crop, a method that gives good results, but is expensive and not always practical if there are no cold storage plants in the vicinity. When the product of the spring crop is used to plant the fall crop, with a period of only a few weeks intervening, the potatoes do not have time to complete their "after-ripening," and consequently poor stands are obtained in the fall crop. While various methods are known whereby dormant potatoes can be forced to sprout and grow, still it was felt that there was a need for a practical method usable on a large scale, to attain this result. Experiments were begun at Davis in the fall of 1922, and while there are many things to be determined yet, it is thought that the results obtained are worth making known.

The most promising line of experiments deals with the treatment of the seed before planting with solutions of various chemicals. All oxidizing agents seem to give results, the nitrates and permanganates being most effective. Sodium nitrate (3 lbs. to 10 gallons of water-solution used only once) seems to be the most likely material to use as a practical proposition, since the ordinary fertilizer grade can be used, and this is usually cheap and easy to obtain. Further experiments may show some other material to be better, however. Experimentally, both potassium and aluminum nitrates give somewhat better results than the sodium nitrate, while calcium and magnesium nitrates are inferior. Sulfate of ammonia and Ferric chloride show some influence, but have not been as effective as the nitrates. Potassium permanganate gives good results if used at just the right strength, which seems to be about a .02 molar (0.3%) solution. It is very toxic in stronger solutions.

The method of treatment has been to cut the dormant potatoes as for planting, then dip them in the solution for one hour. Rinsing in water after this dip is not necessary, and planting can be

delayed a reasonable length of time. Dipping whole tubers in nitrate solutions, and probably other solutions, is not effective, neither are good results obtained when dipping is deferred more than a few hours after cutting. It is possible that a nitrate solution twice as strong as mentioned above could be used, cutting the length of the dip down to one-half hour. How much nitrate will have to be added to the solution to keep up its strength, after dipping each lot, has not yet been determined.

The experiments so far have not indicated that this treatment will be effective on newly dug or immature potatoes. The indications are that the potatoes should be nearly mature before digging, and should be allowed at least four or five weeks to "after-ripen" before cutting, dipping in the nitrate solution, and planting. In other words, the response to the treatment is better as the potato approaches the latter part of its natural dormant period. It is believed that this treatment should prove especially useful in regions using "second crop" potatoes for planting the main or spring crop. Second crop potatoes grown in New Jersey, Maryland, Virginia, Kentucky, and other states, tend to lag behind northern grown seed when planted for the spring crop. Probably, the sprouting and early growth of this class of seed can be made to equal that of northern-grown seed, if given the nitrate treatment.

There are many angles of this matter to be worked out and tested yet. Hence, these remarks are only offered now in a tentative way, and as a basis for further trials.

POTATO STARCH

E. V. Pennock, Wollaston, Mass.

When one considers the fact that potatoes are raised in such large quantities in so many States from the Atlantic to the Pacific, it is indeed a remarkable fact that there is such a small number of starch factories. They could be operated profitably by the manufacturer; and they certainly would be of great benefit to the farming communities which produce potatoes as one of their major crops.

In the production and manufacture of some of our food crops, complicated and expensive processes and machinery are essential; but in the manufacture of potato starch the process is very simple; and the cost of the plant itself amounts to only a few thousand dollars. There is always a market for potato starch, this being largely in the textile industry. For certain classes of work, nothing will take the place of potato starch. The price seems to fluctuate between 3 and 6 cents per pound. After potato starch has been manufactured, it will keep almost indefinitely.

The process of recovering the starch from the potato is very

simple and inexpensive! The potatoes are first carefully and thoroughly washed; then they are grated into a fine pulp, and the starch is washed out of this pulp with clean water. It is then run into vats or tanks. In a few hours the starch settles to the bottom, after which the water is drained off; and then the starch is taken out. It is then dried. This completes the entire process, which only takes about twenty-four hours.

The United States Department of Agriculture has for a number of years been conducting an investigation and research into the question of utilization by the farmer of the potatoes not available for the market; to the end that the enormous loss sustained each year by the farmers on culls or potatoes they are not able to dispose of, may be eliminated. But the scope of the Department is, of course, limited to investigations, and recommendations as to what in its judgment is the most efficient and scientific way for the farmers to eliminate this serious problem of waste in the potato industry. It is self-evident that the starch factory could be made an important factor in the solution of this particular problem.

It is obvious that potatoes can not be profitably grown for starch purposes exclusively; and, of course, those potatoes which are fitted by the size and quality for food consumption would naturally find their way to the markets. But it is also true that there are each year millions of bushels of potatoes which are culls or are not fitted for the market. It also happens at times that either the market has a surplus or the price of potatoes will not warrant shipment by the farmers to the markets. Under these conditions, absorption by the starch factory of such potatoes would seem to be the logical and most efficient solution for the farmers; and enable them to receive some financial return for what would otherwise prove generally to be a total loss.

Every large potato-growing section, and even the smaller ones as well, should have a starch factory to take care of their surplus potatoes. In some instances, perhaps a community mill instead of an individual manufacturer might be of the greatest benefit to the farming community. There are several of these community mills already established; and some of them appear to be operating very successfully. In the apple-growing sections, there are many different mills and methods of converting surplus and unmarketable apples into cider. Some have hand-mills and hand-presses, while other sections have large and modern cider factories. The potato-growing sections could regulate the starch factory to meet their own particular requirements. Development by the farming communities of potato starch factories to take care of their surplus would mark a new era in the potato starch industry of this country.

THE GROUP REACTION OF POTATO VARIETIES TO WART DISEASE

Freeman Weiss

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In 1920 the variety Netted Gem was reported by Kunkel and Orton¹ as "badly warted" in the wart reaction tests of 1919. The Burbank variety, received from two sources, proved to be immune in the trials conducted the following year. It was therefore concluded that this furnished an example of the differential behavior as regards reaction to this disease of two horticulturally related varieties. Similar instances were known among the several varieties assigned by Stuart² to the Rose, Early Michigan, and Green Mountain groups. Thus in the Rose group Early Rose was susceptible to wart, Spaulding Rose immune, and Seneca Beauty susceptible. These three varieties are, however, representative of three different sections of this group which are distinguished by horticultural characters. In the Early Michigan group the variety Early Sunrise stood out as susceptible among other members as, Ehnola, Early Harvest, and Extra Early Sunlight, which are immune. In the Green Mountain group the varieties White Harvest and Gero strain of Green Mountain were found to be susceptible, whereas the type of the group, Green Mountain, was immune. Later it was found that most of the varieties of section 2 of this group, which is distinguished by faint coloration of the sprouts, as American Giant, Carman No. 1, and Empire State, are very susceptible to wart, although Charles Downing, or Idaho Rural, is immune. The statement seemed well founded therefor, which appeared in the general report on the reaction of American varieties to potato wart,³ namely, that "the varietal similarities which constitute the basis of a horticultural classification can not afford an index ***** to predict the wart reaction of a variety from the known behavior of horticulturally similar types." As potato varieties are more carefully studied so as to eliminate mixtures of types and render identification more certain, it appears that the physiological behavior, as shown in the reaction to this disease, may be found more closely to parallel horticultural similarities.

Subsequent results on the reaction of members of the Burbank group have not borne out the opinion that some are immune while others are susceptible. The stock of Netted Gem used for the test in 1919 was held under U. S. Department of Agriculture Accession No. 13,734, and was received from Jerome, Idaho. In 1920 this variety, under the same accession number, was included in the wart trials of the Board of Agriculture for Scotland, and was reported as "not attacked by wart". In 1922 Russet Burbank types from Michigan and Colorado were included in the wart trials at

Freeland, Pa., and both were free from infection. One of these two stocks was re-tested in 1923, and a third was procured from Colorado, and again neither was infected. The years 1922 and 1923 were especially favorable for determining the wart reaction of a variety because abundant infection occurred on the susceptible varieties grown as controls. It seems evident that Russet Burbank (Netted Gem, California Russet) must be added to the list of potatoes immune to wart. This is an important gain because this variety has been found by Lutman⁴ to be the most resistant to common scab of all standard American varieties, and this has been generally borne out by the experience of growers.

It is of interest to note that as a result of further study of the varieties previously assigned to the Early Michigan group, Stuart⁵ has removed Early Sunrise from this group and placed it with Early Rose. As the Michigan group now stands, its members are immune to wart except Brown Beauty, whose place here is somewhat doubtful, and White Albino, for which conflicting records are at hand. In the Rose group the varieties included in Section 1, are, so far as tested, susceptible; Section 2, (Spaulding Rose, King) is entirely immune. The close parallel between Stuart's group treatment of varieties and their reaction to wart is further shown by the fact that the following groups consists exclusively of immune varieties, Cobbler, Early Michigan (probably), Burbank, and Peachblow. These contain only susceptible varieties: Triumph, Early Ohio, Hebron, Rural, Pearl, and Up-to-Date. The remaining two groups include both susceptible and immune types—in the Rose group these are horticulturally distinct, but seemingly not so differentiated in the Green Mountain group. Further study of varietal characters and reaction to wart may tend to extend this interesting parallel in this group also.

¹ KUNKEL, L. O., and ORTON, C. R. The behavior of American potato varieties in the presence of the wart. U. S. Dept. Agr. Circ. 111, p. 10-17. 1920.

² STUART, WILLIAM. Group classification and varietal descriptions of some American potatoes. U. S. Dept. Agr. Bull. 176, p. 59. 1915.

³ WEISS, FREEMAN, C. R. ORTON, and R. E. HARTMAN. The varietal and species hosts of *Synchytrium endobioticum*. U. S. Dept. Agr. Bull. 1156, p. 1-16. 1923.

⁴ LUTMAN, B. F. Resistance of potato tubers to scab. Vermont Agr. Exp. Sta. Bull. 215. 1919.

⁵ STUART, WILLIAM. The Potato. 518 p. illus. Lippincott, 1923.

NEW YORK STATE CABBAGE AND POTATO GROWERS ORGANIZATION CAMPAIGN

W. B. Farrar, Campaign Manager

The upstate potato and cabbage growers in New York have launched an organization campaign looking to the co-operative marketing of cabbage and potatoes in the territory covering twenty to twenty-five counties in northern, central and western portions of the state. This campaign is the result of the unsatisfactory experience of the growers in this section during the last three years. The campaign of organization has not been entered upon without very careful consideration and thought. The present plan has grown out of a series of conferences and mass meetings which have extended over practically a year and have brought together the opinions of between six and seven hundred of the leading growers of the section.

The plan of organization is that each county shall be organized and incorporated as a local unit. When a minimum of twenty counties shall have been organized, the local county units will then be federated into a central sales agency. The Central will be composed of the duly elected representatives of the county locals and will act in an agency capacity under specific powers granted it by the locals. No county will be incorporated in which a minimum of fifty per cent of the commercial acreage is not signed on the five-year contracts. The Central will not be formed until twenty counties have thus been organized. Therefore, the validity of the contract depends upon getting within the organization 50 per cent of the commercial acreage of potatoes and cabbage in twenty or more counties.

The plan of making a county a unit insures sufficient tonnage in each local to justify good local management. Under the present plan of organization, no county is considered in the campaign that has not shipped during the last three years a sufficient volume of these two commodities to justify good local management.

It is estimated that the organization, when completed, will include approximately sixty thousand acres of potatoes and about eleven thousand acres of cabbage. This acreage moving through one organization will undoubtedly make the organization the dominant and stabilizing influence in the New York State cabbage and potato market.

The first two months of this campaign has been devoted to investigational and educational publicity work. Actual sign-up work started in two counties the first week in February. The results of only three days of actual sign-up work are very gratifying. In practically every case, fifty per cent of the growers present at the meetings have signed the contracts and become workers in getting additional signatures.

June first is placed as the date of reaching the goal of acreage sign-up in the territory.

POTATO INSPECTION AND CERTIFICATION IN CANADA

G. Partridge, Chief Inspector, Ottawa Canada

Considerable progress has been made during the past year in the production of certified seed potatoes, and the results of the inspection, taking into consideration the somewhat unfavorable climatic conditions prevailing in many districts throughout the growing season, coupled with the application of a considerably higher standard than that previously applied, were, in our opinion, fairly satisfactory. Perhaps a few figures giving the results by provinces, as well as a combined total of results for the Dominion,

	No. fields inspected	No. acres inspected	No. fields passed	No. acres passed	Per cent fields passed	Per cent acres passed
P. E. I.	825	3212 $\frac{3}{4}$	754	3048 $\frac{3}{4}$	91.4	94.9
N. S. (Garnet)	80	154 $\frac{3}{4}$	70	137 $\frac{1}{2}$	87.5	88.8
(Chili)						
(Others)	90	178 $\frac{3}{4}$	54	86 $\frac{1}{2}$	60.0	48.4
N. B.	837	3475 $\frac{1}{4}$	485	2223 $\frac{1}{4}$	57.9	64.0
Que.	417	959 $\frac{1}{2}$	268	573 $\frac{1}{4}$	64.3	59.7
S. Ont.	142	308 $\frac{1}{4}$	71	195 $\frac{3}{4}$	50.0	63.5
N. Ont.	162	200 $\frac{1}{2}$	100	149 $\frac{3}{4}$	61.7	74.7
Man.	102	391	74	267	72.5	68.2
Sask.	108	446 $\frac{1}{4}$	78	242 $\frac{3}{4}$	72.2	54.6
Alta.	151	354	107	174 $\frac{3}{4}$	70.9	49.4
Total	2914	9681	2061	7099$\frac{1}{4}$	70.7	73.3

The standard for field inspection referred to above was as follows: blackleg, 3 per cent; leafroll, curly dwarf, etc., 2 per cent; mosaic, 2 per cent; wilts, 3 per cent. In no case was the total allowed to exceed 6 per cent.

The tuber inspection standard, which is also higher than any previously applied, was as follows: bacterial rot or wilt, 2 per cent; late blight and dry rot, 3 per cent; common scab and rhizoctonia severe, 5 per cent; powdery scab, 1 per cent. In no case shall a total of more than 10 per cent be allowed; neither shall more than 2 per cent of the tubers be off-type, or damaged by sunburns, cracks, cuts, bruises, insects, etc. Not more than 5 per cent by weight of tubers below three ounces or above twelve ounces will be allowed.

Judging from our inspection returns for 1923, you in this country are perhaps more interested in certified seed of the Irish Cobbler and Green Mountain varieties produced in Eastern Canada than in that produced farther west. We have already the returns

of approximately 300,000 bushels having this year been purchased in this country from growers in the eastern part of the Dominion, and there is no doubt that United States produce dealers would have been glad to purchase a good deal more seed from this source had it been available, and our growers would no doubt have been glad to supply same in larger quantity, this being indicated by the fact that in all likelihood there will be a large increase in the acreage of potatoes submitted for inspection in Canada during 1924.

As a result of the campaign carried on by the inspection service there has also, during the last few years, been an inter-provincial shipment of certified seed within the Dominion, so that in many districts where formerly seed potato growing was given but little consideration, certified seed of a high quality is now being produced. This applies particularly to Nova Scotia and Ontario. New Brunswick continues to maintain her long-established reputation for producing seed of a high quality and the periodical introduction of selected and improved strains, which is a general practice on the part of the growers, augurs well for results in the future. The Province of Quebec is also producing an increasing amount of high-class seed, much of which is being distributed in a judicious manner throughout the province for further propagation. In the prairie provinces,—Manitoba, Saskatchewan, and Alberta,—the question of certified seed potatoes is of more recent introduction than in Eastern Canada, but since the year 1919 a large amount of survey and extension work has been done, and certified seed is now being produced, although for the next year or two the supply will be somewhat limited.

It must be borne in mind that owing to the vastness of the area covered by this inspection work, the formulation of a standard for field inspection to meet all conditions, with the maintenance of uniformity as the end in view, was not possible until the experience of several years' work had been acquired, but the standard which was adopted for 1923,—outlined above,—has worked out to our satisfaction, and its application on a uniform basis is a guarantee to the purchaser of certified seed of Canadian origin that no matter in which province such seed is purchased, it is all of one quality and standard and is vouched for by the certified seed tag bearing the official seal of the inspection service, Dominion Department of Agriculture, copy of which is attached to every bag, barrel, or other container.

It is desired to emphasize the fact that unless these tags appear on the containers of seed potatoes, the contents are not fully certified. It is necessary that the purchaser be definitely informed on this point, since instances have come to our attention where prospective purchasers of seed have visited the fields of growers and contracted for a supply of seed on the strength of the field inspection report without any stipulation being made with regard to tuber

inspection or grading. In other words, such contracts have been made for "field" or "bin" run, whereby the grower is enabled to ship his seed without further reference to the inspection service, providing it is sold as merely "seed potatoes." In the event of any complaint or dissatisfaction with regard to the quality or grading of such seed, the inspection service cannot, under the circumstances, accept any blame.

This matter is of further importance inasmuch as in some years we have experienced difficulty due to the fact that attempts have been made by some shippers of seed potatoes to copy the certified tags, with the result that misrepresentation has arisen and in some cases purchasers have been misled because they were not thoroughly acquainted with the appearance of the official tag. I would therefore repeat that all official tags bear a copy of the seal of the inspection service, and this should be looked for in every case when certified seed of Canadian origin is being purchased.

To provide against such misrepresentation in the future, a clause was recently inserted in the Dominion Destructive Insect and Pest Act regulations, under which regulations certified seed potato inspection is performed, this clause reading as follows:

"An inspector shall have the power to inspect before export to any foreign country, or shipment within the Dominion, any plant, and to grant a certificate according to the requirements of any country demanding such, or for domestic purposes.

"All certificates so issued must bear a copy of the official seal of the plant disease or insect pest inspection service carried on under this Act.

"In the case of potatoes for which such certificates are required, no person shall be allowed to sell or offer, advertise, expose, or hold in possession for sale, for seed purposes, any potatoes in any manner or from described or designated as inspected, registered, selected, or disease-free seed potatoes unless such potatoes are contained in sacks, barrels, or other containers, to each of which shall be durably attached a certificate stating that any such potatoes contained therein have been inspected in the field and after harvest by an inspector under the Destructive Insect and Pest Act and have been found sufficiently vigorous and free from serious diseases, other pests, foreign varieties, mechanical injury, or other blemishes, to warrant them being classed as Extra No. 1 certified seed potatoes. All such certificates shall bear the grower's name or number, as well as a copy of the official seal of the Plant Disease Inspection Service of the Department of Agriculture, Canada."

This clause strengthens our hands considerably in dealing with the unauthorized use of tags, and it is hoped that no further cases will occur.

This year, 1923, was the ninth since the inauguration of this in-

spection service, and we find as a result of the work accomplished that many of our growers have acquired considerable knowledge with regard to any diseases which may appear in their fields, and co-operate with us in our endeavor to keep them under control. We still experience some trouble with regard to isolation, or insufficient distance between the planting of potatoes intended for certified seed and other fields of potatoes. We often come across instances where a grower, on planting his certified seed has run short to the extent of perhaps a bushel or two and has made the mistake of completing his planting by the use of seed from some unreliable source, and has thus laid his certified stock open to the danger of becoming affected by diseases communicable in the field. During the past two years we have issued warnings against this practice, and it is proposed, in the event of any instances along this line being found in the future, to definitely look upon the same as a matter calling for the rejection of fields submitted for inspection regardless of whether such fields are in other respects eligible. At the present time this appears to be the only amendment necessary to our regulations, and for the year 1924 the field inspection standard will remain as it is at the present time. It may be necessary to somewhat amend the tuber inspection standard, but this cannot be determined until we have complete information with regard to the results of the tuber inspection for the past year.

The bulk of the applications for inspection are received from growers of the Irish Cobbler and Green Mountain varieties, which is evidenced by the fact that out of the total of 9,681 acres inspected in 1923, 4,303 acres were of the Green Mountain variety and 3,650 acres of the Irish Cobbler variety. The other varieties for which application for inspection were made are those which appear to be in demand in various districts, such as the Garnet Chili in Nova Scotia, the Carman No. 1 in Northern Ontario, the Dooley in parts of Southern Ontario, and the Early Ohio in Manitoba and Saskatchewan. Of these varieties we inspected 155, 149, 72, and 126 acres, respectively.

Reference was made above to the work being upon a uniform basis throughout the Dominion, and in this connection it may be further explained that the service is administered from the Central Experimental Farm, Ottawa, by a Chief Inspector, under the direction of the Dominion Botanist, who was the originator of the system. In each province there is a District Inspector, who is responsible to Ottawa for the work of a number of inspectors,—varying according to the amount of work in each province,—and for the efficient control of all inspection duties in his territory. The whole service is rendered free of direct charge to the growers, an annual appropriation being made under the Destructive Insect and Pest Act.